



Application for Licence Amendment

Part V Division 3 of the *Environmental Protection Act 1986*

Licence Number	L9369/2023/1
Licence Holder	Iluka Rare Earths Pty Ltd
ACN	654 487 662
File Number	DER2022/000702
Premises	Eneabba Rare Earths Refinery Brand Hwy ENEABBA WA 6518 Legal description – Mining Tenement M70/821 and part of State Agreement Tenure M267SA As defined by the Premises maps in Schedule 1 and coordinates in Schedule 2 of the Revised Licence.
Date of Report	22 February 2024
Decision	Revised licence granted

MANAGER, PROCESS INDUSTRIES

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Eneabba Rare Earths Refinery (ERER, the Premises). As a result of this assessment, Revised Licence L9369/2023/1 has been granted.

The Revised Licence issued as a result of this amendment consolidates and supersedes the existing Licence previously granted in relation to the Premises.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the Department of Water and Environmental Regulation (DWER, department) has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Application summary and overview of premises

Licence L9369/2023/1 is held by Iluka Rare Earths Pty Ltd (Licence Holder) for the ERER, located on mining tenement M70/821 and part of State Agreement Tenure M267SA, Brand Highway, Eneabba, WA 6518.

On 4 October 2023, the Licence Holder submitted an application to the department to amend Licence L9369/2023/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought, including authorisation to:

- Allow the combined disposal of 'sand and clay slimes' and 'process water' into an existing mine void (West Dam), which is currently only authorised to store process water; and
- Construct and operate:
 - a new pipeline to facilitate the transport of tailings from the Concentrator Plant to the West Dam; and
 - a new pipeline to facilitate the transport of decant water from the West Dam to the WSP process water tank.

This amendment is limited only to changes to category 8: mineral sands mining or processing activities from the existing Licence, this amendment does not relate to any changes to currently approved throughputs for category 8. No changes to the aspects of the existing Licence relating to category 63: Class I inert landfill site have been requested by the Licence Holder.

In addition to the Licence Holder's proposed amendments to the existing Licence, the Delegated Officer has determined to make administrative amendments to:

- Rename the existing 'process water pond' to 'WSP process water pond';
- Rename the 'process water dam' back to its original name 'West Dam';
- Remove duplication within regulatory requirements;
- Update format and appearance of the licence; and
- Correct clerical mistakes and unintentional errors.

2.2.1 Background of Eneabba Phase 2 Project

Commencement of the Eneabba Phase 2 Project (infrastructure approved under

W6458/2020/1), which included commissioning of the Concentrator Plant, commenced in June 2022 and concluded in July 2022. Since August 2022, the plant has been utilised to process an old stockpile of semi-processed middlings (South Secondary Concentrator Middlings or SSC Mids) to produce a Heavy Mineral Concentrate while the ERER was being designed and built (under works approval W6641/2022/1).

The processing of the SSC Mids only utilises the Gravity Separation Circuit meaning the Flotation Plant is idled and under care and maintenance.

The processing of monazite (rare earth bearing mineral) is scheduled to commence in 2024 to create a stockpile to feed into the ERER. It is anticipated that the processing of the monazite material will be alternated with the SSC Mids from the beginning of 2024 to the end of 2025.

The commissioning of the ERER is set to commence in 2026, at which point the Concentrator Plant will be dedicated to the processing of monazite material. The Licence Holder has advised that the water treatment system for the ERER will have the capacity to treat process water from the Concentrator Plant. This capability is expected to decrease dependence on storage within the West Dam, leading to surplus storage capacity.

Currently, sand and clay slimes from the Concentrator Plant are densified and co-disposed with the thickener underflow clay from the Separator Plant as a slurry and pumped into the East Tailings Dam mine void. The Licence Holder is requesting that West Dam be utilised for disposal of tailings from the processing of the SSC Mids once the East Tailings Dam is full.

2.2.2 Background of the existing mine void (West Dam)

The original approval for the existing mine void, referred to as 'West Dam', designated it as a location for tailings disposal for Phase 2 activities through works approval W6458/2020/1, granted on 16 February 2021. However, on 13 May 2021, this works approval underwent an amendment to convert the West Dam for the use of process water storage instead of having to construct an additional lined process water pond. During this amendment, the department evaluated the risk associated with discharging process water into an unlined facility. As a result, additional regulatory measures were introduced, encompassing the monitoring of the quality of input process water and the installation of additional monitoring wells, including one situated at the north-western corner of West Dam. Due to this change in function, an alternative mine void was requested to be utilised for the purpose of tailings disposal (East Tailings Dam).

The West Dam was used for flotation wastewater storage during the commissioning and time limited operations of the Eneabba Phase 2 Project (W6458/2020/1). As the current operations (processing of stockpiles of SSC Mids) do not require the use of the Flotation Plant, the West Dam has not been deposited into since July 2022.

The current amendment to Licence L9369/2023/1 seeks approval for the disposal of 'clay and sand tailings' in conjunction with the current authorisation for 'process water' disposal into the existing mine void. Consequently, the department is proposing to rename this infrastructure from 'process water dam' back to its original name 'West Dam', to avoid confusion with its new intended use.

Throughout the remainder of this Amendment Report, the existing mine void will now be referred to as the 'West Dam'.

2.2.3 Proposed construction

West Dam and associated infrastructure

To facilitate tailings deposition into the West Dam, the installation of an additional pipeline is necessary. This new pipeline will be constructed to convey tailings slurry from the Eneabba Phase 2 Project process plant to the West Dam. It will mirror the design of the current tailings pipeline leading to the East Tailings Dam (approved under works approval W6458/2020/1), involving construction within an earthen bund and equipped with automatic controls, including

cut-outs in the event of a leak or pipeline failure.

The West Dam, being pre-existing infrastructure, does not necessitate any construction for this Licence amendment application. The West Dam dimensions are approximately 360 m in length and 200 m in breadth, and it covers a total area of 4.96 hectares (ha).

A new pipeline will also be constructed to facilitate the transport of decant water from the West Dam to the WSP process water tank. It will mirror the design of the current tailings pipeline leading to the East Tailings Dam (approved under works approval W6458/2020/1), involving construction within an earthen bund and equipped with automatic controls, including cut-outs in the event of a leak or pipeline failure.

2.2.4 Proposed operations

West Dam and associated infrastructure

The Licence Holder has advised that the West Dam will be used for the combined disposal of 'sand and clay slimes' and 'process water' from January 2024 to December 2025. However, starting from January 2026 onwards, the West Dam will be utilised for water treatment and storage.

The West Dam has a total capacity of 380,000 m³ with the proposed maximum volume of tailings stored to be 200,000 m³ (250, 000 tonnes) from the processing of the SSC Mids leaving capacity of 180,000 m³ for water treatment and storage. The Licence Holder acknowledges that the need for additional process water storage will arise only when the Concentrator Plant begins utilising the flotation circuit.

The Licence Holder has advised that the average tailings deposition rate is estimated to be 400 m³/day, and the process water deposition rate will be balanced with the return rate of decant water as to not exceed the West Dam's maximum storage capacity of 180,000 m³ (estimated remaining capacity following maximum tailing deposition), whilst maintaining a 1 m freeboard. The maximum process water deposition rate is expected to be 1,000 m³/day.

The Licence Holder has confirmed that other inputs into the West Dam include surface/stormwater runoff from the Concentrator Plant area and any overflow water from the WSP process water pond. The WSP process water pond collects and stores surface/stormwater runoff from the Wet Separation Plant area and has an overflow pipeline to the West Dam located 0.5 m from the top of the pond.

Inspections will be conducted as per existing Licence conditions including the visual integrity and leak assessment on all pipelines, assessment of water levels, condition of walls and pump operational characteristics on the West Dam whilst in operation.

The decant water from West Dam will be pumped back into the WSP process water tank which currently accepts tailings decant water from the active East Tailings Dam.

The current inputs and outputs of the systems under this Licence shown in Figure 1 below.

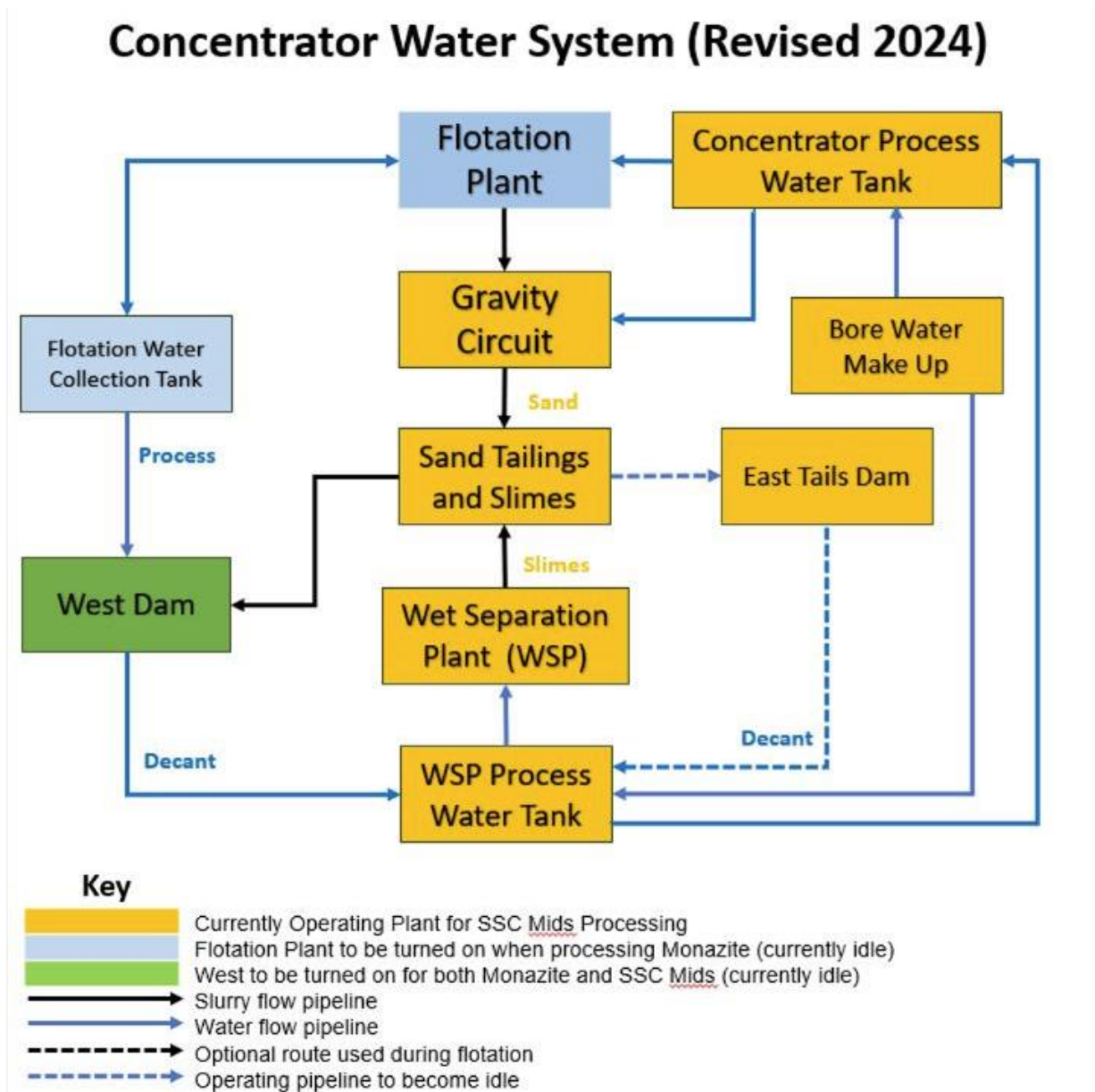


Figure 1: Inputs and Outputs

3. Legislative context

3.1 Mineral Sands (Eneabba) Agreement Act 1975

The ERER is subject to a State Agreement which is overseen by the Department of Jobs, Tourism, Science and Industry (JTSI) on behalf of the Minister for State Development.

3.2 Radiation Safety Act 1975

The Premises is a registered Radiation site (RS 53/76 482) under the *Radiation Safety Act 1975* and operates under a Radiation Management Plan approved by the Radiation Council of WA and Department of Energy, Mining, Industry Regulation and Safety (DEMIRS).

3.3 Rights in Water and Irrigation Act 1914

The Licence Holder currently holds groundwater licences GWL104700 and GWL104709 for the

allocation of 8,000,000 kL/year and 3,000,000 kL/year respectively. The amendments being sought out in this application will not require additional groundwater consumption.

3.4 Part IV of the EP Act

The ERER was referred under Part IV of the EP Act with the referral examined, preliminary investigations and inquiries conducted. On 10 January 2022, a determination was made that the proposal would not be assessed under Part IV of the EP Act.

4. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

4.1 Source-pathways and receptors

4.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 1 below. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Licence Holder controls

Potential emission	Source	Potential pathways	Proposed controls
Construction			
Dust	Operation of mobile equipment (e.g. light vehicles and heavy equipment)	Air / Windborne pathway	<p><u>Existing operational controls (Licence L9369/2023/1):</u></p> <ul style="list-style-type: none"> Requires dust suppression using water carts when discernible levels of dust are generated from ground surfaces on the Premises [condition 13, Table 9]; and Implementation of the Dust Management Plan (2022) [condition 14, Table 10], which includes but is not limited to the implementation of procedures for dust suppression, windy conditions, traffic. <p><u>Existing monitoring regime (Licence L9369/2023/1):</u></p> <ul style="list-style-type: none"> Dust monitoring (with Eneabba townsite as the main receptor).
Operation			
<ul style="list-style-type: none"> Sand and clay slimes 	West Dam	Seepage through unlined storage	<p><u>Existing operational controls (Licence L9369/2023/1):</u></p> <ul style="list-style-type: none"> Remedial actions to be taken if process

Potential emission	Source	Potential pathways	Proposed controls
<ul style="list-style-type: none"> Process water 		infrastructure with infiltration to groundwater	water entering West Dam (formerly named the process water dam) is recorded at pH <7 [condition 16]. <u>Existing monitoring regime (Licence L9369/2023/1):</u> <ul style="list-style-type: none"> Monitoring of process water quality [condition 15, Table 11]; and Monitoring of ambient groundwater concentrations [condition 25, Table 14]. <i>For noting:</i> <ul style="list-style-type: none"> The nearest ambient groundwater monitoring well is located downstream, directly north-west of the West Dam – EM94).
		Overtopping of West Dam with direct discharge of tailings and/or contaminated water to land and infiltration to groundwater	<u>Proposed operational controls:</u> <ul style="list-style-type: none"> Water levels to be maintained at least 1 m below the top of the wall. <u>Existing monitoring regime (Licence L9369/2023/1):</u> <ul style="list-style-type: none"> Daily inspection (whilst operating) for assessment of water levels [condition 8, Table 4].
<ul style="list-style-type: none"> Sand and clay slimes Decant water 	New pipeline	Pipeline rupture/leak and direct discharge of tailings and/or contaminated water to land and infiltration to groundwater	<u>Proposed design and operational controls:</u> <ul style="list-style-type: none"> Constructed as per the design of the current tailings pipeline leading to the East Tailings Dam (approved under works approval W6458/2020/1), involving construction within earthen bunds and equipped with automatic controls, including cut-outs in the event of a leak or pipeline failure. <u>Existing monitoring regime (Licence L9369/2023/1):</u> <ul style="list-style-type: none"> Daily inspection (whilst operating) for visual integrity and leak assessment [condition 8, Table 4].

4.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 2 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from proposed category 8 (Mineral sands mining or processing) activities
Town of Eneabba	Approximately 8 km north-north-west of the West Dam and WSP process water pond.
Users of Brand Hwy	Approximately 4.5 km west of the West Dam and WSP process water pond.
<p><i>Distance of proposed category 8 activities to human receptors are sufficient to inform that project activity impacts are not foreseeable.</i></p> <p><i>Human receptors are not considered to be impacted during construction activities and operations and therefore not further considered in the risk assessment.</i></p>	
Environmental receptors	Distance from proposed category 8 (Mineral sands mining or processing) activities
Groundwater	<p>Premises is located within the Arrowsmith Groundwater Area proclaimed under <i>Rights in Water and Irrigation Act 1914</i>.</p> <p>Groundwater is considered fresh at 500 to 1,000 mg/L total dissolved solids (TDS) (DWER Geocortex).</p> <p>Two main aquifers: Quaternary aged Supervifial; Formation sediments and underlying Yarragadee Formation.</p> <p>Groundwater depth at the Premises is approximately 20 metres below ground level (mbgl).</p> <p>Groundwater depth below Eneabba Mozanite Pit (EMP) located approximately 290 m east of West Dam, is approximately 3-5 mbgl.</p> <p>Groundwater monitoring data from monitoring wells located directly downstream from West Dam (EM94S/D):</p> <ul style="list-style-type: none"> • Standing water levels ranged from 96.26 metres Australian Height Datum (mAHD) to 97.3 mAHD in the shallow well and 84.049 mAHD to 84.189 mAHD in the deep well (noting elevation of ground at well location is 106.979 mAHD); • pH ranged from 6.0 to 7.1 in the shallow well and 6.1 to 10.3 in the deep well; and • Salinity ranged from Total Dissolved Solids (TDS) of 850 mg/L to 1,300 mg/L in the shallow well, and 720 mg/L to 840 mg/L in the deep well. <p>Groundwater flow is generally in a west to north-west direction.</p>
Public drinking water source area (Eneabba Water Reserve)	<p>Eneabba township water supply (Water Corp bore 1/89).</p> <p>P1: approximately 6.6 km north of the West Dam and WSP process water pond.</p> <p>P2: approximately 4.5 km north of the West Dam and WSP process water pond.</p> <p><i>Distance of proposed category 8 activities to the Eneabba Water Reserve is sufficient to inform that project activity impacts are not foreseeable.</i></p>

	<i>The Eneabba Water Reserve is not considered to be impacted during construction activities and operations and therefore not further considered in the risk assessment.</i>
South Eneabba Nature Reserve	Approximately 3 km west and 2 km south of the West Dam and WSP process water pond.
Threatened Ecological Community (TEC) – Rocky Springs Ferricrete	<p>Approximately 5 km west of the West Dam and WSP process water pond.</p> <p><i>Distance of the proposed category 8 activities to the TEC is sufficient to inform that project activity impacts are not foreseeable.</i></p> <p><i>The TEC is not considered to be impacted during constructions activities and operations and therefore is not further considered in the risk assessment.</i></p>
Native vegetation	<p>Approximately 300 m east of the West Dam and WSP process water pond.</p> <p><i>For noting:</i></p> <ul style="list-style-type: none"> <i>The native vegetation located within 700 m east of the West Dam and WSP process water pond is approved to be cleared under CPS 6915/5)</i>

4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 4.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 4.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

The Revised Licence L9369/2023/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Category 8 activities.

The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 3. Risk assessment of potential emissions and discharges from the Premises during operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory requirements
Source/Activities	Potential emission	Potential pathways and impacts	Receptors	Licence Holder's controls				
Construction								
<p><u>Source:</u> Operation of mobile equipment (e.g. light vehicles and heavy equipment)</p> <p><u>Activities:</u> Construction and/or installation of new pipelines and the associated secondary containment infrastructure</p>	Dust	<p>Pathway: air / windborne pathway</p> <p>Impact: native vegetation health</p>	<p>South Eneabba Nature Reserve (approximately 3 km west and 2 km south of the West Dam and WSP process water pond)</p> <p>Native vegetation (approximately 300 m east of the West Dam and WSP process water pond)</p>	See Section 4.1.1	<p>C = Slight</p> <p>L = Rare</p> <p>Low Risk</p>	Y	<ul style="list-style-type: none"> Condition 13 (Table 9): Dust controls Condition 14 (Table 10): Implementation of a Dust Management Plan 	The Delegated Officer notes that the existing Licence L9369/2023/1 includes sufficient regulatory requirements for managing dust emissions during construction activities.
Operation								
<p><u>Source:</u> West Dam</p> <p><u>Activities:</u> Deposition of sand and clay slimes and process water into the West Dam</p>	<ul style="list-style-type: none"> Sand and clay slimes Process water 	<p>Pathway: seepage through unlined storage infrastructure with infiltration to groundwater</p> <p>Impacts:</p> <ul style="list-style-type: none"> Reduced quality or contamination of soil/sediment and/or groundwater Groundwater mounding 	<p>Native vegetation (approximately 300 m east of the West Dam and WSP process water pond)</p> <p><i>For noting:</i></p> <ul style="list-style-type: none"> The native vegetation located within 700 m east of the West Dam and WSP process water pond is approved to be cleared under CPS 6915/5) <p>Groundwater (approximately 9.7 mbgl)</p>	See Section 4.1.1	<p>C = Minor</p> <p>L = Likely</p> <p>Medium Risk</p>	Y	<ul style="list-style-type: none"> Condition 15 (Table 11): Process water quality monitoring Conditions 16 and 17: Remedial actions for when input process water quality is pH <7 Condition 24 (Table 13): Monitoring of tailings disposal volumes Condition 25: Ambient groundwater monitoring program 	<p>The Delegated Officer notes that both process water and tailings slurry deposition into this existing mine void has been previously assessed under L5646/1994/10 and W6458/2020/1 and have been found to be of acceptable risk provided regulatory requirements are complied with. Licence L9369/2023/1 merged the infrastructure, associated operations and regulatory requirements from those two instruments. The scope of this risk assessment is related to the co-disposal of both process water and tailings slurry as requested by Licence Holder.</p> <p>The co-disposal of tailings and process water into West Dam is unlikely to cause significant environmental impacts; however, the volume and duration of the process water discharge may affect groundwater mounding and the extent at which the tailings would remain wet and capable of releasing seepage to the groundwater.</p> <p>The Delegated Officer has determined that existing Licence conditions relating to groundwater monitoring of standing water levels, specifically the monitoring wells EM94 (shallow and deep) located down gradient (north-west of West Dam) will be sufficient in monitoring risks of potential seepage and/or groundwater mounding. The Delegated Officer has proposed that standing water levels in condition 25 (Table 14) should also be provided in a unit of metres below ground level (mbgl) to allow clearer interpretation of data.</p> <p>An increase in groundwater mounding would steepen the hydraulic gradient near the water table and therefore the rate of contaminant transport in the groundwater may be increased. It is noted that the most significant contaminant in seepage from the West Dam is likely to be sulfate, and the concentrations of metals (particularly dissolved iron) in seepage water could be minimised by maintaining the pH of the discharged process water above 7.</p> <p>Monitoring data from well EM94 (shallow well) indicates that the groundwater level is approximately 9.7 mbgl and that the pH is</p>

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory requirements
Source/Activities	Potential emission	Potential pathways and impacts	Receptors	Licence Holder's controls				
								<p>approximately 6.0. The pH levels appear to be trending lower and this will need to be monitored ongoing.</p> <p>Sulfate levels ranged from 57 mg/L to 77 mg/L and there was no indication of increasing metal or metalloid concentrations.</p> <p>Existing licence conditions include monitoring process water inputs and West Dam water quality, with remedial actions for water inputs with pH <7. The Delegated Officer has determined that existing conditions and the groundwater monitoring program are considered sufficient in managing the risk of contamination to groundwater, noting that ongoing assessment of the water quality in monitoring well EM94 will be the earliest indication to change of risk of contamination.</p>
		<p>Pathway: overtopping of West Dam with direct discharge of tailings and/or contaminated water to land and infiltration to groundwater</p> <p>Impact: reduced quality or contamination of soil/sediment and/or groundwater</p>			<p>C = Minor L = Unlikely Medium Risk</p>	Y	<ul style="list-style-type: none"> Condition 6 (item 5a, Table 2): Minimum freeboard to be maintained Condition 8 (item 2, Table 4): Inspection of water levels 	<p>The Delegated Officer notes that the existing Licence L9369/2023/1 includes sufficient regulatory requirements for managing overtopping risks during operations.</p>
<p><u>Source:</u> New pipeline</p> <p><u>Activities:</u> Transport of tailings and decant water via new pipelines</p>	<ul style="list-style-type: none"> Sand and clay slimes Decant water 	<p>Pathway: pipeline rupture/leak and direct discharge of tailings and/or contaminated water to land and infiltration to groundwater</p> <p>Impact: reduced quality or contamination of soil/sediment and/or groundwater</p>			<p>C = Minor L = Possible Medium Risk</p>	N	<ul style="list-style-type: none"> <u>Condition 1 (Table 1): Design, construction and/or installation requirements for the new pipelines</u> <u>Conditions 2 and 3: Submission of an Environmental Compliance Report following construction and/or installation of the new pipelines</u> Condition 4: Pipeline controls Condition 8 (item 1, Table 4): Inspection of visual integrity and leak assessment 	<p>The Licence Holder's proposed pipeline design, featuring construction within an earthen bund and the incorporation of automatic controls, including cut-outs in the event of a leak or pipeline failure, has been included as a regulatory requirement within the Licence.</p> <p>The following additional regulatory requirements have been applied:</p> <ul style="list-style-type: none"> New pipeline construction and/or installation requirement to ensure that the bund is of sufficient capacity to completely contain any spills from pipeline leakage or failure for a period equal to the time between routine inspections; and For the submission of an Environmental Compliance Report following construction and/or installation of the new pipeline.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020).

Note 2: Proposed Licence Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

5. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) advised of proposal 8 November 2023.	<p>DEMIRS replied on 1 December 2023 stating that:</p> <ul style="list-style-type: none"> The mine void (West Dam) in scope of this amendment is located on State Agreement Tenure (M267SA) and therefore not regulated under <i>Mining Act 1978</i>; DEMIRS has previously provided advice to DWER on TSF design and potential radiological risks at this premises, but not any advice relating to the diversion of tailings to this mine void; DEMIRS regularly provide comments to JTSI for state agreement proposals, however, there appears to be no record for the change of this TSF/process dam change; and DEMIRS does not appear to be currently regulating this matter. 	<p>Noted.</p> <p>The department notes that it is the Licence Holder's responsibility to have obtained all necessary approvals under other legislation.</p>
Licence Holder was provided with draft amendment on 15 February 2024	Refer to Appendix 1	Refer to Appendix 1

6. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

6.1 Summary of amendments

Table 5 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 5: Summary of Licence amendments

Relevant section or condition no.		Proposed amendments
Old condition number	New condition number	
Cover page	–	<ul style="list-style-type: none"> Updated the 'File Number' to correctly describe the department internal filing system; Inclusion of 'Date of Amendment'; Updates to the Premises details including:

Relevant section or condition no.		Proposed amendments
Old condition number	New condition number	
		<ul style="list-style-type: none"> ○ Removal of the text 'Being'; ○ Updating the naming of the State Agreement Tenure from 'AM70/267' to 'M267SA' noting that this actual land or tenure has not changed and this is just an update of reference; ○ Change text from 'detailed' to 'defined'; and ○ Addition of 'the coordinates in' to clearly in indicate Schedule 2 includes the coordinates of the Premises.
Licence history	–	<p>Inclusion of a Licence history table documenting the summary of historical licence amendment to include:</p> <ul style="list-style-type: none"> ● Description on the granting of the licence on 12/04/2023; and ● The scope of this amendment.
Throughout licence	–	<p>The following items have been updated throughout the licence:</p> <ul style="list-style-type: none"> ● Rename the existing 'process water pond' to 'WSP process water pond'; ● Rename the 'process water dam' back to its original name 'West Dam'; ● Rename "monazite concentrate" to "Rare Earth HM"; ● Values updated to superscript text as necessary; ● Use of capital letters updated to lower case to align with the department's corporate style guide and maintain consistent use of terminology throughout the licence. Key words (including Premises) are now demonstrated in lower case; ● Updates to cross referencing of conditions, tables and figures for accuracy purposes; and ● Inclusion of the column heading 'No.' within relevant tables to itemise line items and enhance readability.
–	Condition 1 (Table 1)	Inclusion of regulatory requirements for the construction and/or installation of the new pipelines including additional regulatory requirement for pipeline bunding to be of sufficient capacity to contain any spills for a period equal to the time between routine inspections.
–	Conditions 2 and 3	Inclusion of regulatory requirements for the submission of an Environmental Compliance Report following construction and/or installation of the new pipelines.
Condition 1	Condition 4	Text updated to include process water and update the text 'return water' to 'decant water'.
Conditions 2 and	Conditions 5	<ul style="list-style-type: none"> ● Table 2 heading updates include:

Relevant section or condition no.		Proposed amendments
Old condition number	New condition number	
3 (Table 1)	and 6 (Table 2)	<ul style="list-style-type: none"> ○ Inclusion of the 'Infrastructure location' column to provide reference to relevant figures within the licence; ○ Column 4 heading text updated to include the text 'and/or operational'; ● Conditions 5 and 6 text updated to reflect Table 2 heading updates. ● Old line item 1 removed as relevant containment infrastructure is already included as separate line items within the table; ● New line item 1 added for the specific containment infrastructure of North Gas Pit TSF which is an existing approved location for tailings disposal. Operational requirements consolidated from previous condition in Table 3: Infrastructure and equipment requirements that referred to the general 'sand/clay tailings disposal areas'; ● Line item 2 updates include: <ul style="list-style-type: none"> ○ Item (b) text updates to accurately reflect existing operations, these include: <ul style="list-style-type: none"> – 'Decant overflow' to 'Decant water'; – 'drains' to 'to be transported'; and – 'process water dam' to 'WSP process water tank' as Licence Holder has advised that decant water from East Tailing Dam is returned to this location; ○ Item (c) minimum freeboard updated from 500 mm to 1 m as the Licence Holder has advised that water levels will be maintained at least 1 m below the top of the pit wall on mine void disposal areas; ○ Removal of items (d) and (e) as these are no longer relevant to current operations at the Premises; and ○ Inclusion of respective figure reference in column 4. ● Line item 4 updates include: <ul style="list-style-type: none"> ○ Text updated to reflect the name change of the infrastructure from 'process water pond' to 'WSP process water pond'; ○ Text updated to reflect correct material inputs from 'Process Water' meaning 'decant water, recycled process water, to listing the inputs: surface/stormwater runoff from WSP area and recycled process water; and ○ Text updated in Column 4 to include the current Text updated in Column 4 to include description of infrastructure that it was lined with 1.0mm HDPE liner and also that there is an overflow pipe between the WSP process water pond and the West Dam which the Licence Holder has advised. ● Line item 5 updates include:

Relevant section or condition no.		Proposed amendments
Old condition number	New condition number	
		<ul style="list-style-type: none"> ○ Text updated to reflect the name change of the infrastructure from 'process water dam' to 'West Dam'; ○ Updated column 2 reference to 'process water' to include the source 'from concentrator' as the Note¹ (referenced for line item 4) refers to 'decant water' which is not reflective of the process water accepted at West Dam and has been removed as part of this amendment; ○ Updated column 2 to authorise deposition of sand and clay slimes tailings slurry and remove accepting decant overflow; ○ Updated text 'Surface water and stormwater runoff' to 'Surface/Stormwater runoff' and "process plant and mineral concentrate stockpile area' to 'from the Concentrator Plant area and overflow of the WSP process water pond' to ensure accurate and consistent terminology is used throughout the licence and amendment report, noting that the WSP process water pond receives surface/stormwater runoff from WSP area and mineral concentrate stockpile area; ○ Material listed in column 2 has been placed in bullet format for ease in readability; ○ Inclusion of 'Constructed as an erosion resistant, non-polluting structure which is stable in the long-term' as required by existing licence conditions for TSFs and was confirmed by the Licence Holder; ○ Minimum freeboard updated from 500 mm to 1 m as the Licence Holder has advised that water levels will be maintained at least 1 m below the top of the pit wall on mine void disposal areas; and ○ Inclusion of operational requirement for the decant water to be transported to WSP process water tank. ○ Removal of 'Specified in Figure 4 of Schedule 1' as location column added. ● Updated Note¹ from 'Tails return water' to 'decant water' to ensure consistent terminology is used throughout the licence.
Condition 4 (Table 2)	Condition 7 (Table 3)	<p>Table 3 updates include:</p> <ul style="list-style-type: none"> ● Updated column 4 heading text to include equipment; ● Updating column 4 'Infrastructure and equipment location' to reflect the relevant figures applicable to each line item; ● Line item 9: <ul style="list-style-type: none"> ○ Updated text 'Process plant' to 'Wet Separation Plant' to ensure accurate and consistent terminology is used throughout the licence and amendment report; and ○ Text updated to reflect the accurate infrastructure

Relevant section or condition no.		Proposed amendments
Old condition number	New condition number	
		<p>location name from 'process water dam' to 'WSP process water pond';</p> <ul style="list-style-type: none"> • Old line item 10 removed as operational requirements for pipelines are already covered by condition 4; • New line item 10 added for WSP Process water tank; • New line item 16 to include the 'Concentrator Process Water Tank' which was advised to by the Licence Holder to receive process water from the WSP process water tank. This infrastructure was previously not captured within the licence; • Old line item 17 removed as inspection requirements are already covered by condition 8 (Table 4) and condition 6 (Table 2) has been updated to specify storage of process water from concentrator; and • Old line item 19 removed as condition 6 (Table 2) has been updated to address approved tailings disposal locations and inspection requirements are already covered by condition 8 (Table 4).
Condition 5 (Table 3)	Condition 8 (Table 4)	<p>Table 4 updates include:</p> <ul style="list-style-type: none"> • Line item 1 updated to include process water and update the text 'return water' to 'decant water'; • Removal of generic infrastructure and instead a list of specific infrastructure; <ul style="list-style-type: none"> ○ Removed "mined out voids, cells within operating pits, external TSFs, process water dam"; ○ Inclusion of "West Dam", "WSP Process Water Pond" and "Any other infrastructure"; ○ Separated listed infrastructure to individual line items 2-6; ○ Clarification or specific types of inspection to occur at each infrastructure instead of a general list for all infrastructure.
Condition 12 (Table 10)	Condition 15 (Table 11)	<ul style="list-style-type: none"> • Condition 15 text updated to reflect name change of infrastructure from 'Process Water Dam' to 'West Dam' and addition of 'concentrator' to specify the floatation circuit as part of the concentrator plant; and • Line item text updated to reflect the name change of the infrastructure from 'Process Water Dam' to 'West Dam'.
Condition 13	Condition 16	Text updated to reflect the name change of the infrastructure from 'Process Water Dam' to 'West Dam'.
Condition 15 (Table 11)	Condition 18 (Table 12)	Text updated to reflect the name change of the infrastructure from 'Process Water Dam' to 'West Dam'.

Relevant section or condition no.		Proposed amendments
Old condition number	New condition number	
Condition 22 (Table 13)	Condition 25 (Table 14)	<p>Table 14 updates include:</p> <ul style="list-style-type: none"> • Addition of the unit 'mbgl' to be provided for standing water levels (SWL); • Monitoring well locations listed in column 1 have been placed in bullet format for ease in readability; and • Removal of Note 4 relating to quarterly reporting as this aspect is already covered in condition 21.
Definitions (Table 15)	–	<ul style="list-style-type: none"> • Definitions for the following terms have been included: <ul style="list-style-type: none"> ○ metres ○ metres below ground level ○ suitably qualified engineer
Figure 1	–	Updated Figure 1 that shows the location of the 'North Gas Pit'.
Figure 2	–	Updated Figure 2 that shows the location of 'West Dam' and 'North Gas Pit TSF'.
Figure 3	–	Updated Figure 3 and caption to reflect change in name from 'Process water dam' to 'West Dam'
Figure 4	–	<p>Updated Figure 4 of site overview including all pipelines including:</p> <ul style="list-style-type: none"> • East Tailings Dam – tailings and decant pipeline; • West Dam – separate tailings, process water and decant pipeline; and • Overflow pipeline between WSP process water pond and West Dam.
Figure 5	–	New Figure that labels the infrastructure in the Wet Separation Plant area.
Figure 6	–	New Figure that labels the infrastructure in the Concentrator Plant area.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.

Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions

Condition	Summary of Licence Holder's comment	Department's response
Licence History	<ul style="list-style-type: none"> a) Request to change "Eneabba Phase 2 Project process plant" to "concentrator plant"; and b) Update wording for decant return pipeline to report to "WSP process water tank" instead of "WSP process water Pond". 	<ul style="list-style-type: none"> a) Department accepts this change; and b) Department accepts this change with the understanding that decant water from the tailings facilities at the site are transported to the WSP process water tank.
Condition 1 (new condition), Table 1	<p>Requested changes to wording in column 1, Table 1:</p> <ul style="list-style-type: none"> a) Request to change "Eneabba Phase 2 Project process plant" to "concentrator plant"; and b) Update wording for decant return pipeline to report to "WSP process water tank" instead of "WSP process water Pond". 	As above.
Condition 6 (old condition 3), Table 2	<ul style="list-style-type: none"> a) Licence Holder has agreed to departments proposed amendment to remove general items from this table and instead list specific infrastructure. b) Request change to item 2 to remove specification of "combined sand and clay slimes from the thickener" from the material column; c) Requested changes to line item 3 to update: <ul style="list-style-type: none"> (i) "EMP Resource Pit" to "Eneabba Monazite Pit (EMP)"; and (ii) "Monazite concentrate" to "Rare Earth HM". d) Requested changes to item 4: <ul style="list-style-type: none"> (i) Confirmed that there is no active freeboard limit at the WSP Process water pond, and instead there is an overflow discharge pipe at 0.5 below the top of pond, which is discharge to West Dam; (ii) Changes to item 4 to remove the WSP process water pond as this does not accept any process water, and instead stores runoff from the WSP area. e) Requested changes to item 5: <ul style="list-style-type: none"> (i) Request to remove specification of "combined sand and clay slimes from the thickener"; (ii) Row 5 – Licence Holder has confirmed that the West Dam will accept surface / stormwater run off from the Concentrator Plant area and also any overflow (via overflow pipeline) from the WSP process water pond, which collects water from the Wet separation Plant area.); (iii) Change location of decant water to report to "WSP Process water Tank" instead of "WSP Process water pond". 	<ul style="list-style-type: none"> a) Department has removed general items from this table. As Licence Holder has confirmed that North Gas Pit is to remain a potential future tailings storage location and has been previously listed as an authorised alternative tailings disposal void, the Department has included this infrastructure as its own line item and consolidated existing conditions for mine voids as part of the operational requirements. The Department also notes that future use of this location will require an amendment to the licence to assess the construction and operation of a tailings deposition pipeline. b) Department accepts this change noting that the deposited tailings are a mix of combined slimes from the concentrator plant and thickener underflow; c) (i) Department accepts this change; (ii) Department accepts this change. d) (i) Department notes the controls at the WSP process water pond, and instead of removing this item, has edited the material to indicate that this pond accepts surface water runoff; (ii). Department will not remove this item but has updated Column 3 to be reflective of material captured in the WSP Process water pond. e) (i). Department accepts this change noting that the deposited tailings are a mic of combined slimes from the concentrator plant and thickener underflow; (ii). Department accepts this clarification; (iii). Department accepts this change.
Condition 7 (old condition 4), Table 3	<ul style="list-style-type: none"> a) Updating Infrastructure locations to be reflective of updated figures provided; b) Change row 9 site infrastructure name from proposed "Wet Screening Plant area" to "Wet Separation Plant area - general"; c) Change row 9 to indicate that surface water runoff from the WSP plant area will report to the WSP process water pond; and d) Licence Holder requests the infrastructure "WSP Process Water Tank" be included in this infrastructure table. 	<ul style="list-style-type: none"> a) Department accepts the changes and will reference infrastructure in Table 4 to most recently updated Figures provided by Licence Holder; b) Department accepts this change; c) Department accepts this change; d) Department accepts this addition.
Condition 12 (old condition 9), Table 8	Change the "Monazite concentrate" to "Rare Earth HM".	Department accepts this change.
Condition 15 (old condition 12), Table 11	<ul style="list-style-type: none"> a) Change reference to "Process Water Dam" to "West Dam"; b) Addition of "concentrator" in: <i>The licence holder must undertake monitoring of the process water dam, during operation of the concentrator floatation circuit, for the parameters listed in Table 11, in the corresponding units, over the corresponding averaging period and at the corresponding frequency set out in Table 11.</i> 	<ul style="list-style-type: none"> a) Department oversight during draft, change accepted; b) Department accepts this change as it specifies the flotation circuit at the concentrator plant.
Condition 18 (old condition 18), Table 12	Change process water dam to West Dam.	Oversight during draft, change accepted.
Condition 25 (old condition 22), Table 14	The Licence Holder has requested to remove Radon analysis for groundwater monitoring as this does not provide any indication of contamination is highly variable and difficult to measure accurately.	The Department has not actioned this requested change this change, noting that this amendment was not requested as part of the initial application and is not administrative in nature. The Licence Holder's justification will need to be assessed and deemed acceptable before making this change.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY			
Application type			
Amendment to licence	<input checked="" type="checkbox"/>	Current licence number:	L9369/2023/1
		Relevant works approval number:	W6458/2020/1
Date application received	4 October 2023		
Applicant and Premises details			
Applicant name/s (full legal name/s)	Iluka Rare Earths Pty Ltd		
Premises name	Eneabba Rare Earths Refinery		
Premises location	Mining Tenement M70/821 and part of State Agreement Tenure M267SA		
Local Government Authority	Shire of Carnamah		
Application documents			
HPCM file reference number:	DER2022/000702		
Key application documents (additional to application form):	-		
Scope of application/assessment			
Summary of proposed activities or changes to existing operations.	As per section 2.2 of this Amendment Report.		
Category number/s (activities that cause the premises to become prescribed premises)			
Table 1: Prescribed premises categories			
Prescribed premises category and description	Assessed production capacity	Proposed changes to the production capacity (amendments only)	
Category 8: Mineral sands mining or processing	18,600,000 tonnes per annual period	No changes proposed to the production capacity	
Category 63: Class I inert landfill site	10,000 tonnes per annual period	No changes proposed to the production capacity	
Legislative context and other approvals			
Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Mining tenement: M70/821 Expiry: 20 February 2036	

		Approval: Sublease for M267SA Expiry date: 20 January 2052
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Approval: N/A Expiry date: N/A If N/A explain why? Premises is on Mining Tenement and State Agreement Tenure.
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A. No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Licence not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Name: Arrowsmith Groundwater Area Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Not a new activity.
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Eneabba Water Reserve located 4 km north of PWD
Is the Premises subject to any other Acts or subsidiary regulations?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<i>Mineral Sands (Eneabba) Agreement Act 1975</i> <i>Radiation Safety Act 1975</i>
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>	